**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM:  | WEEK: 8 | STRAND: NUMBER AND ALGEBRA | **SUB-STRAND:**  MULTIPLICATION AND DIVISION 1 | **WORKING MATHEMATICALLY:** MA3-1WM, MA3-2WM, MA3-3WM |
| OUTCOMES: MA3- 6NA | **Selects and applies appropriate strategies for multiplication and division, and applies the order of operations to calculations involving more than one operation.** |
| **CONTENT:**  | **Solve problems involving division by a one-digit number, including those that result in a remainder.** * Use digital technology to divide whole numbers by one- and two-digit numbers
* Apply mental and written strategies, and digital technologies, to solve division word problems
* Use selected words to describe each step of the solution process
* Recognise when division is required to solve word problems

**Use estimation and rounding to check the reasonableness of answers to calculation.*** Use estimations to check the reasonableness of answers for multiplication and division questions
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| ASSESSMENT FOR LEARNING(PRE-ASSESSMENT) | Division Worksheet-Division problems: word based and number, with and without remainders. Estimation problems.   |
| WARM UP / DRILL | * IWB display of the various ways to visually represent division
* IWB match up division metalanguage with the correct definitions
* Game: in pairs students complete division problems using dice and flash cards with varying numbers, and take turns to record their answers. Students check their answers using calculators.

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| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION  |  Each group creates division problems which involve rounding up the answer. The groups swap with each other and complete the problems. Students record how they worked out the problems and share with the class. This could also be set up as a **class quiz.** |
| QUALITY TEACHING ELEMENTS | **INTELLECTUAL QUALITY** | **QUALITY LEARNING ENVIRONMENT** | **SIGNIFICANCE** |
| * Deep knowledge
* Deep understanding
* Problematic knowledge
* Higher-order thinking
* Metalanguage
* Substantive communication
 | * Explicit quality criteria
* Engagement
* High expectations
* Social support
* Students’ self-regulation
* Student direction
 | * Background knowledge
* Cultural knowledge
* Knowledge integration
* Inclusivity
* Connectedness
* Narrative
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| RESOURCES | Worksheets, backing paper and template to make division spinners, Multiplication grid, Dice and number cards, IWB, class wiki, Poster paper, textas and coloured pencils, canteen sales and stock lists, computers, Online maths division problems from the IXL Website: <http://au.ixl.com/math/year-5>, How to start a wiki guide- http://www.wikihow.com/Start-a-Wiki |

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES |
| Explicitly teach* How to round numbers appropriately when obtaining estimates to numerical calculations.

**Define and reinforce metalanguage used in this unit e.g.*** Rounding up , rounding down, round to, division, remainder, decimal, digit, strategy

**IWB game*** Students take turns matching up the correct answer, rounding up from a division question.

**Update Class wiki*** Students reflect on what they have learned about rounding up

**Think aloud*** Model thinking aloud when solving rounding up problems.
* **Update class display**
* Students add any new metalanguage definitions, and new knowledge
 | LEARNING SEQUENCE 4RemediationLate S2 | Revise the rounding of decimals to two decimal points (p141 maths syllabus).Model division using concrete materials  |
| LEARNING SEQUENCEEarly S3 | Whole class instruction and modelled activities **Rounding up** * **Worksheet showing problem solving:** using a worksheet with four columns students complete division problems which result in the need to round up or down. In the first column is the question, the second column students can record their answer which is not yet rounded up or down, column includes student explaining what they did, why they chose to round up/ down and the working out of the question. The fourth column shows their rounding answer.
* **Skit:** In groups,students create their own “division” story where they need to round up. Give the students a numerical problem only and they can fill out a story. Give students examples and also prompts such as what is being divided? Is money? Is it a crowd of people waiting to go on a tour? Is it brussel sprouts at dinner at a boarding school ? Explain to students they must use the metalanguage – this can be displayed on the IWB or on cards for each group as a reminder. Metalanguage definitions will also be displayed in the class as part of the display started at the beginning of the unit.
* **Group activity:** Each group creates division problems which involve rounding up the answer. The groups swap with each other and complete the problems. Students record how they worked out the problems and share with the class. This could also be set up as a **class quiz.**
* **Investigation:** students look into real life situations where you would need to round up an answer. For example at the supermarket. Use supermarket brochures. Students write up a shopping list of their own with 10 items and add up the amounts using a calculator. Students round up the remainders. This can be repeated. Students can create lists and swap with a partner to calculate and round the answers up or down. (For example round to the nearest dollar).
* **Student videos:** Students interview each other asking set key questions about how they solve a division question. Record the interview in video. Add to the class wiki. Have a class viewing of student videos and discuss. The videos would be about 5min long at the most)
* Assessment: Worksheet solving a range of rounding up problems. Observation of students using appropriate metalanguage.

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| LEARNING SEQUENCEExtension Late S3 |  Students solve rounding up problems using higher numbers, word problems and numerical using a variety of formats.Students create their own rounding up scenarios and problems to solve. |
| **EVALUATION & REFLECTION** | Student engagement :Resources:Achievement of Outcomes:Follow up: |